

**REMARKS****Status of the Claims**

Claims 1-23 and 25-44 are pending in the present application. Claims 17-23, 25, 27-32, and 43-44 are currently-amended. Claims 1-16, 24, 26 and 35-42 have been cancelled. New claims 45-52 have been added. In light of these amendments, and the remarks herein, reconsideration of claims 17-23, 25, 27-34, and 43-52 is respectfully requested.

**Amendments to the Claims**

To expedite prosecution of this application, Applicants present the following amendments without prejudice. Standing alone, such amendments are not intended to indicate the Applicant's agreement with the Examiner's basis for objection to or rejection of any of the claims. Applicants maintain the right to pursue any of the filed claims in one or more continuing applications.

Claim 17 is amended to alter the dependency of the claim and to conform the claim to the language of currently-amended claim 19.

Claim 18 is amended to conform the claim to the language of currently-amended claim 19.

Claim 19 is amended to recite "irradiating the portion of the tooth with electromagnetic radiation having at least one wavelength range corresponding to an absorption spectrum of a stain in the tooth." Support for the amendment can be found throughout the specification, particularly at paragraphs 152-166, including paragraph 164.

Claim 20 is amended to conform the claim to the language of currently-amended claim 19.

Claim 21 is amended to recite that the stain may be present in the enamel of the tooth. Support for the amendment can be found throughout the specification, particularly at paragraphs 152-166, including paragraph 155.

Claim 22 is amended to conform the claim to the language of currently-amended claim 19.

Claim 23 is amended to conform the claim to the language of currently-amended claim 19 and to recite additional categories of substances that cause teeth to become stained. Support for the amendment can be found throughout the specification, particularly at paragraphs 152-166, including paragraph 152.

Claim 25 is amended to conform the claim to the language of currently-amended claim 19.

Claim 27 is amended to recite the application of an exogenous chromophore. Support for the amendment can be found throughout the specification, particularly at paragraphs 152-166, including paragraph 158.

Claim 28 is amended to conform the claim to the language of currently-amended claim 19.

Claim 29 is amended to conform the claim to the language of currently-amended claim 19.

Claim 30 is amended to conform the claim to the language of currently-amended claim 19.

Claim 31 is amended to conform the claim to the language of currently-amended claim 19 and to recite a wavelength range of 280 to 800 nm. Support for the amendment can be found throughout the specification, particularly at paragraphs 152-166, including paragraph 164.

Claim 32 is amended to conform the claim to the language of currently-amended claim 19.

Claim 43 is amended to alter the dependency of the claim to currently-amended claim 19.

Claim 44 is amended to alter the dependency of the claim to currently-amended claim 19.

Since all the amendments are supported within the filed application, including the claims as originally filed, no new matter is introduced.

### New Claims

New dependent claims 45 - 52 have been added. Support for the newly added claims can be found throughout the specification, particularly at paragraphs 152-166, including paragraph 154, 160 and 166. Accordingly, no new matter has been added by the proposed new claims.

### Objections to the Specification

The Examiner objected to the specification on various grounds. Although Applicants do not agree with the Examiner's stated bases for the objections, the objection has been alleviated based on the cancellation of claims 1 and 10, which was undertaken for other reasons.

### Claim Rejections - 35 U.S.C. § 112

Claims 1-18, and 43-44 stand rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. Claims 1-16 have been cancelled for reasons not associated with the rejection. Applicants submit that the amendments to claims 17-18 and 43-44, which conform the claims to the language of currently-amended independent claim 19, overcome the stated basis for the rejections, because these claims are no longer dependent upon now-cancelled claim 1.

In light of the statements above and the amendments to claims 17-18 and 43-44, the rejected claims particularly point out and distinctly claim the subject matter of the invention. Accordingly, the pending claims meet the requirements of 35 U.S.C. §112, second paragraph.

**Claim Rejections - 35 U.S.C. § 102**

Claims 19-23, 25 and 27-34 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,879,159 to Cipolla (herein “Cipolla”). These claims are not anticipated by Cipolla, however, because Cipolla fails to disclose all of the elements recited in the claims as amended. For example, Claim 19 recites “irradiating the portion of the tooth with electromagnetic radiation having at least one wavelength range corresponding to an absorption spectrum of a stain in the tooth.”

Cipolla does not disclose these elements of the claimed invention. Cipolla discloses a “method of whitening teeth...using bleaching compositions.” (Cipolla Col. 8, lines 22-26.) These bleaching compositions are, for example, hydrogen peroxide, carbamide peroxide, sodium perborate, and other oxygen radical generating agents. (Cipolla Col. 8, lines 26-28.) Cipolla does not disclose irradiating a stain in the tooth absent a bleaching composition. Further, Cipolla does not disclose irradiating a stain in the tooth using a wavelength range that corresponds to the absorption spectrum of the stain. Instead, Cipolla discloses irradiating the bleaching composition using a wavelength range intended to activate the composition, which is disclosed as light particularly in the “blue/green spectrum.” (Cipolla Col. 8, lines 33-47.)

In the office action, the Examiner states that “Cipolla teaches a method for whitening teeth by radiating with a broadband light source,” that such sources are well known to have wavelengths exceeding 200 – 1000 nanometers, and that Cipolla’s disclosure concerning use of light in the blue/green spectrum teaches irradiating “stain molecules as chromophores.” (See Office Action at 5.) However, the Examiner’s interpretation of Cipolla does not disclose the elements of Claim 19 for at least three reasons.

First, as discussed above, Cipolla discloses only the use of bleaching agents as chromophores, and does not teach utilizing a stain as a chromophore. Cipolla only states that light in the blue/green spectrum is more readily absorbed by tissue of certain colors (yellow/brown) and reflected by tissues of other colors (red). (Cipolla Col. 1, lines 44-57.) Cipolla does not state that the application of blue/green light is sufficient to cause stain molecules to act as a chromophore.

Second, Cipolla explicitly teaches filtering the broadband light source to eliminate light outside the range of 430 nm – 505 nm. (Cipolla Col. 5, lines 27-41.) In conjunction with FIG. 3, Cipolla teaches that the peak absorption of the light that is applied is between 435-500 nm, and that the transmission of light outside that range is essentially zero. (Cipolla Col. 5, lines 57-61 and FIG. 3.) Similarly, although Cipolla employs an arc lamp, it explicitly teaches that heat should be eliminated by filtering out infrared wavelengths. (Cipolla Col. 5, lines 27-41.)

Third, Cipolla does not teach irradiating a stain with electromagnetic radiation having a range of wavelengths that correspond to the absorption spectrum of the stain.

Claims 20-23, 25, 27-34 are patentable for at least the same reasons that claim 19 is patentable. Accordingly Claims 19-23, 25, 27-34 are patentable over Cipolla.

Claims 43 and 44 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,942,658 to Rizoiu et al. (herein “Rizoiu”). These claims are not anticipated by Rizoiu, however, because Rizoiu does not disclose all of the elements of independent Claim 19, from which Claims 43 and 44 now depend. Applicants submit that the change in dependency from now-cancelled Claim 1 to currently-amended Claim 19 overcomes the Examiner’s rejection, because Rizoiu does not disclose all of the elements of Claim 19. For example, Rizoiu discloses a whitening process that employs a gel that is applied to the teeth (Rizoiu Col. 7, lines 15-63), and does not disclose the irradiation of a portion of a tooth with electromagnetic radiation having a range of wavelengths that correspond to the absorption spectrum of a stain in the tooth. Accordingly Claims 43 and 44 are patentable over Rizoiu.

#### **Claim Rejections - 35 U.S.C. § 103**

##### *Claims 17 and 18*

Claims 17 and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Rizoiu in view of U.S. Patent 6,106,293 to Wiesel (herein “Wiesel”). These claims are not obvious in light of the cited art, however, because neither reference discloses all of the elements of independent Claim 19, from which Claims 43 and 44 now depend. Applicants submit that the change in dependency from now-cancelled Claim 1 to currently-amended

Claim 19 overcomes the Examiner's rejection for the reasons stated above in conjunction with claims 43 and 44. Therefore, Applicants submit that Claims 17 and 18 are patentable over the cited art.

**CONCLUSION**

In view of the amendments and remarks above, Applicants submit that Claims 17-23, 25, 27-34, and 43-52 are in condition for allowance, and allowance thereof is respectfully requested. Applicants encourage the Examiner to telephone the undersigned in the event that such communication might expedite prosecution of this matter.

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Respectfully submitted,

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